

PROBIOTICS IN SWINE PRACTICE

The use of probiotics (animal intestinal inoculants) in swine has become an exciting new concept in veterinary medicine and animal production.

Interest and research into probiotics began around 1900 in human medicine, however interest decreased after the introduction of antibiotics into veterinary and human medicine. However, in later years, bacterial resistance and sensitivity problems with antibiotics stimulated interest again in probiotics as growth promotants and prophylaxis against the effects of stress.

Most authorities define probiotics as products containing living, naturally occurring, gastrointestinal (GI) origin, lactic acid producing bacteria (Lactobacilli, enteric Streptococci or Enterococci and Bifidobacteria). The term probiotic (pro=for, biotic=life) as opposed to antibiotic (anti=against, biotic=life) was originally developed to describe the above mentioned lactic acid bacteria.

The proper functioning GI tract of warm blooded animals contains over 400 species of bacteria, some of which are beneficial to the animal and exist in a symbiotic relationship with the host. These important organisms function in aiding digestion, enhancing immunity, producing essential nutrients such as vitamins, help to maintain the proper pH and water balance and performing other functions including preventing the overgrowth of nonbeneficial or potentially pathogenic bacteria which include clostridia, coliforms such as E.coli and spirochetes.

The beneficial bacteria of the GI microflora, including the lactic acid producing bacteria, exist in an uneasy balance with the non-beneficial organisms in normal, non-stressed situations. When animals are exposed to stress, the beneficial organisms are somehow affected and are removed from the GI tract, allowing the non-beneficial, stress resistant bacteria to overgrow and cause problems. This overgrowth may result in frank disease such as diarrhea, or subclinical manifestations, causing loss of production such as lowered feed efficiency or lowered milk production.

The probiotic concept functions to replace the beneficial bacteria as soon as possible into the GI tract to minimize the loss of production or the possibility of resulting disease.

The intensive modern swine production procedures of farming create many stresses on animals, such as transportation, castration, ration changes, chilling, dampness, large concentrations of animals, diseases and others. Probiotics administered after these stresses, or preferably in anticipation of them, help limit the detrimental effects.

Probiotic products of value must include viable strains of carefully selected beneficial organisms in appropriate numbers for the particular type of animal involved. Too many or too few organisms may cause the probiotic to be ineffective.

Theories of Mode of Action:

1. Competitive Inhibition- Probiotic organisms competing directly with the non-beneficial organisms for GI wall space, preventing an overgrowth of the potentially pathogenic organisms.
2. Production of lactic acid, hydrogen peroxide and other compounds, detrimental to non-beneficial bacteria.
3. Production of digestive enzymes and B-vitamins.
4. Enhancement of the immune system, local gut and systemic.

Safety - The organisms commonly used in probiotics are found naturally in the GI tract of man and animals and when administered back to the animal in large numbers are non-toxic and create no chemical or drug residues.

Use Programs in Swine:

1. New born pigs - Administered to baby pigs, individually, in high stress situations as soon as possible after birth, especially in farrowing rooms with considerable E.coli diarrheas. Products are available in the liquid and gel forms.
2. Weaned pigs(Nursery)- Due to the heavy stress of weaning, products are administered in the feed or water using granular or soluble forms, or individually to each pig.
3. Sows-Give probiotics 1-2 weeks prior to farrowing and continue until the pigs are weaned. The product should be given in the feed and stimulates the sow's appetite, increases feed consumption and maintains good milk production. Decreases constipation, as well.
4. Growing and Finishing Pigs-(50 to 235 lbs)- Administered in the feed, to maintain feed consumption, increased gains in weight and good feed efficiency in the presence of stress and/or disease or heavy antibiotic treatment. (Antibiotics remove beneficial bacteria as well as the disease producing bacteria, probiotics replace them).

Future-Continued research will result in better probiotic products, which will further aid in the production of swine, without the heavy reliance on antibiotics.